

BIRDS OF THE MURRAY RIVER REGION BETWEEN MILDURA AND
RENMARK, AUSTRALIA—BREEDING, BEHAVIOURAL
AND FEEDING RECORDS

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Abstract

Breeding, migration and nomadic movements, general behavioural and feeding records are provided for some 126 bird species inhabiting or visiting the Murray River region between Mildura and Renmark, Australia, during the course of 19 field trips from 1967-70.

Introduction

This paper reports part of a systematic recording of information about the bird species inhabiting or visiting the Murray River region between Mildura and Renmark during 19 field trips from 1967-1970. The recording was an adjunct to geologic and anthropologic investigations of the proposed Chowilla Dam inundation area and its environs. In an endeavour to gather all possible information in case of inundation, the recording of the birds of the region was detailed, giving a picture of their lives (including movements). Some 126 species are listed, but many more were recorded.

The sequence of presentation of families and species follows the order and nomenclature of Condon (1969). Where considered necessary, trinomials are introduced. Each species is discussed in chronologic order of record, beginning with breeding records (*Br.*), then those dealing with movement and migrations (*M.*), general descriptions of behaviour (*BH.*), and finally foods and feeding (*F.*). Three of the habitats in which bird recording most commonly occurred are shown in Pl. 34, figs. 1-3.

Plants named in the text were identified from Leigh and Mulham (1965), and by courtesy of the National Herbarium, Melbourne. The insects were named by Miss E. Mathieson, Assistant in Entomology, National Museum of Victoria. Surface wind speeds are according to the Beaufort Scale.

Order CASUARIIFORMES

Family DROMAIDAE

Dromaius novaehollandiae

Br.: 23 June 1967, male with 4 newly-hatched chicks, Lybra Paddock, Keera Station, Vict. 3 Oct. 1967, male with 3 chicks, post-striped stage, Nampoo Station, N.S.W. 28 Aug. 1968, bird incubating 6 eggs, Berribee Station, Vict., Geoff Bowden (pers. comm.). 23 Sept. 1968, male with several small chicks charged and threatened Bowden when he approached group closely on motor-cycle, Berribee Station, Vict. 20 Nov. 1968, male with 4 tiny striped chicks, Talgarry/Nulla Stations boundary fence, N.S.W. 29 July 1969, male with 8 stripey chicks, 2.8 km N. of Butchers Tank, Dunedin Park Station, N.S.W. 4 Oct. 1969, male with 2 small chicks, Talgarry Station dams, N.S.W.

Order PODICIPEDIFORMES

Family PODICIPEDIDAE

Podiceps novaehollandiae

Br.: 22 Oct. 1968, pair at new nest, outer edge of dense cumbungi, Moorna E. oxbow, N.S.W.

P. poliocephalus

M.: 22 Oct. 1968, 100+ on Moorna E. oxbow, N.S.W. Normally an uncommon species in the district. 23 May 1969, 200+ at same locality 31 May 1969, 400+ same locality.

F.: 31 May 1969, group of 10 diving repeatedly beneath large patch of floating *Azolla*, Murray River, opposite Moorna Station woolshed, N.S.W.

P. cristatus

M: 25 Apr. 1968, 160-200 in well-spaced groups of 20-30 on Lake Victoria, opposite Old Hotel site, Nulla Station, N.S.W. No feeding; birds apparently resting on surface, 1330 hr.

Order PELECANIFORMES

Family PELECANIDAE

Pelecanus conspicillatus

BH: 18 Mar. 1969 (see *P. carbo* 18 Mar. 1969). 22 Mar. 1969, 1908 hr. 4 alighted on 4 separate vertical broken-off stumps protruding from water just offshore at Lake Victoria, Nulla Station, N.S.W., preened briefly, then roosted with bills beneath wings and legs contracted, appearing as huge mushrooms in the lake. 18 July 1969, 2 displaying at each other, standing on log in water, with wings extended, tips drooping, necks extended toward each other, deep grating calls. Butcher's Tank, Dunedin Park Station, N.S.W.

M: 19 Nov. 1968, 5 passed over at estimated 1.5 km, NE. 1410 hr., Bone Guleh, Moorna Station, N.S.W.

F: 29 Jan. 1968, many fish in Lake Victoria dying in warm shallow water (temperatures throughout week ranging from 43 to 47 C. in shade); 47 pelicans seen actively feeding on these fish, NE. Lake Victoria, Nulla Station, N.S.W. 31 Oct. 1968, 60+ feeding in rough water emerging from outlet regulator, Rufus River, N.S.W. Many *P. carbo* also present. 24 Nov. 1968, 25 feeding at outlet of Rufus River regulator, N.S.W. One large injured fish drifting downstream was repeatedly being picked up by pelicans but none could swallow it. One bird got the fish into bill, but the weight caused the bird to tilt forward, dropping the fish. Several other pelicans that had been resting on the bank charged into the water and joined in, but none could swallow it. Fish and fighting pelicans drifted around bend out of sight.

Family PHALACROCORACIDAE

Phalacrocorax carbo novaehollandiae

17 Mar. 1969, a large breeding colony pre-

sent in dead red gums, NW. Lake Victoria, Noola Station, N.S.W. Nests of sticks placed on forks, horizontal branches or tops of stumps; most nests with downy chicks, 1-3; many eggshells washed up on beach nearby. Adults disperse chiefly to W., NE., SE. for food, departing entirely from the lake. Some birds do feed in lake, e.g. large feeding flocks present (records below). Birds returning to colony from elsewhere travel high, 220-700 m, in line or in shallow V-formation; when over lake flock disperses, birds plummet down individually at high speed. Those coming from W. fly immediately to nests; those from NE. or SE. drop down to near lake level as soon as they cross the shoreline, then reform in lines and fly low over water to the colony before dispersing to nests. Colony has been established in the area for several years, G. H. Lamb, J. May (pers. comm.), Noola Station, N.S.W. 28 May 1969, several occupied nests located in dead red gums, 1-2 km N. of Rufus River Public Hall, SW. of Lake Victoria, N.S.W.

BH: 22-25 Apr. 1968, 1000+ estimated, in several dense feeding flocks, each of 200-400 birds, on Lake Victoria, N.S.W. 24 Apr. 1968, estimated 2000 cormorants spread 5-deep in a long line along beach of Lake Victoria, mostly with wings spread to dry, and preening. Other dense groups out fishing in lake, 1120 hr. Estimated 2000 Silver Gulls also present along shoreline amongst cormorants, and many others, in flocks of up to 300, hovering over groups of fishing cormorants. 18 Mar. 1969, estimated 4000 in huge group on beach, adjacent trees, and in water nearby; 70 pelicans, 400 plus black swans also present. Pump shed area, Lake Victoria, Talgarry Station, N.S.W. 26 Mar. 1969, 60+ in long straggling skein flying NNE. and slowly gaining height to estimated 180 m as leave Lake Victoria, probably to another feeding site. Nulla Station, N.S.W.

F: 31 Oct. 1968 (see *P. conspicillatus* 31 Oct. 1968). 25 Jul. 1969, several large feeding flocks, totalling many thousands of birds, on Lake Victoria, N.S.W.

P. varius

M: 25 July 1969, 11 in dead gums, Lake Victoria, Talgarry Station, N.S.W.

Order ARDEIFORMES

Family ARDEIDAE

Ardea novaehollandiae

Br: 18 Nov. 1968, pair courting at nest site high in red gums over Murray River bank. Nest appeared half-built, of sticks, opposite Merbein cliff in N.S.W.

F: 26 Mar. 1969, 1 wading in deep rain-water pool amid *Nitraria* bushes, sand hills at Lake Victoria, Oak Hills paddock, Nulla Station, N.S.W.

A. pacifica

F: 26 Sept. 1968, 1 immature bird feeding in large roadside puddles, open country, c. 3.5 km S. of nearest stream course, Keera Station, Vict.

Family PLATALEIDAE

Threskiornis spinicollis

F: 29 Jan. 1968, 45 plus 23 *P. flavipes* feeding over flooded flat following 127 points rain 3 days earlier. Tareena Homestead, Salt Creek, N.S.W. 27 Nov. 1968, 4 feeding between trees in flooded citrus orchard. Overhead sprinklers in full operation, birds apparently quite unconcerned, Renmark, S.A.

Plegadis falcinellus

M: 25 Mar. 1969, 1 on beach at pump shed, Lake Victoria, Talgarry Station, N.S.W.

F: 25 Oct. 1967, 9 feeding in freshly flooded irrigated lucerne paddock, with other waterfowl and bird species (see notes on Feeding Associations), near homestead Berribee Station, Vict. 27 Mar. 1969, 14 feeding in shallow water at margin of canegrass *Eragrostis australis* swamp, SW. paddock, Nulla Station, N.S.W.

Platalea flavipes

F: 29 Jan. 1968 (see *T. spinicollis*, 29 Jan. 1968).

Order ANSERIFORMES

Family ANATIDAE

Cereopsis novaehollandiae

M: Dec. 1967-Feb. 1968, 3 birds spent 2 months on irrigated pasture at Moorna Station, N.S.W. See Simpson 1972, p. 97. Pers. comm.

from R. Honner and E. Ablett, Moorna Pastoral Co.

Cygnus atratus

Br: 25 Sept. 1967, 2 pairs with 6 and 3 cygnets respectively, all recently hatched, Moorna E. oxbow, N.S.W. 1 Oct. 1967, adult on nest of reeds on small island same oxbow lake, pair with 5 well grown cygnets; pair with 2 newly hatched cygnets. 22 Oct. 1968, 5 or 6 pairs of adults, each with cygnets, varying ages from new-hatched to almost fully fledged, same oxbow.

BH: 18 Mar. 1969 (see *P. carbo* 18 Mar. 1969).

M: 18 Apr. 1968, 300+ at Moorna E. oxbow, N.S.W.

Tadorna tadornoides

Br: 1 Oct. 1967, pair with 3 small ducklings, Moorna E. oxbow, N.S.W. 1 Aug. 1968, pair with eggs, hollow in red gum on banks Monoman Cr. (Kelvin Kempster, pers comm.) S.A. 22 Sept. 1968, pair with 11 chicks on water, Oscars Lagoon, Berribee Station, Vict.

M: 20 July 1969, flock of 44 on water at small salt lake 4-6 km E. of road to Nulla Station, on Dunedin Park Station, N.S.W.

Anas castanea

Br: 21 Sept. 1968, bird flew from hollow in dead spout of living red gum, 10 m over water, Mullaroo Cr., Berribee Station, Vict. 19 Nov. 1968, pair with 3 large downy chicks on Murray River, Moorna Station wool shed, N.S.W.

M: Mar. 1968, banded bird recovered by Richard Harvey of Nulla Station, N.S.W., at NW. Tank, No. 09-15668, Fisheries and Wildlife Dept. banded Lara Lake, Vict. (38° 01'S, 144° 25'E) on 16 Jan. 1967 (c. 530 km direct).

A. rhynchotis

M: 21 Mar. 1969, 10 at Moorna E. oxbow, N.S.W.

Malacorhynchus membranaceus

M: 20 July 1969, 62 at Butcher's Tank, Dunedin Park Station, N.S.W.

F: 27 Nov. 1968, single bird on Murray River feeding among *Azolla* and exposed weeds near bank, Nampoo Station, N.S.W.

Aythya australis

M: 26 Jun. 1967, flock of 200, Moorna E. oxbow, N.S.W. 25 Sept. 1967, 150 at same locality. 15 Mar. 1969, 550+ on water close to shore among dead red gums, N. Lake Victoria, Nulla Station, N.S.W. 31 May 1969, flock estimated 160 flew downriver, Fisherman's Cliff, Moorna Station, N.S.W.

Chenouetta jubata

BH: 23 June 1968, 14 in group, in swampy red gum forest. One male displayed briefly to another male. Berribee Island, Murray R., Vict.

M: 17 June 1968, pair at roadside puddle, Merbein-Renmark road, Ned's Corner Station, Vict. (76 pt. rain overnight).

Oxyura australis

M: 21 Mar. 1969, 32 at Moorna E. oxbow, N.S.W.

Biziura lobata

BH: 26 Sept. 1967, male displaying to female, Moorna E. oxbow, N.S.W.

Order ACCIPITRIFORMES

Family ACCIPITRIDAE

Milvus migrans

F: 29 July 1969, 1 attempting to pick up a large dead fish floating in Darling River, Wentworth, N.S.W. Direct lift not achieved, but fish eventually grounded in shallow water, where kite commenced feeding.

Haliastur sphenurus

Br: 29 Sept. 1967, nest with 3 small young, 24.4 m in red gum, banks Murray R. on Berribee Station, Vict., opposite Nampoo Station, N.S.W. 21 Oct. 1967, nest in dead tree at Lake Victoria, N.S.W., situated 12 m above water and 92 m out from shoreline. Adults making frequent trips with food for 3 small young. (Pl. 35, fig. 1) 23 Oct. 1968, 1 well fledged young, in same nest as above, Talgarry Station, Lake Victoria, N.S.W. Continuous occupation of the same nest was recorded each year from 1967-72.

BH: (see *H. leucogaster* 1 Oct. 1967).

F: 6 May 1967, pair at freshly killed rabbit,

main road, Keera Station, Vict. 27 June 1967, 1 carried a 23 cm skink to tree and ate it, Winjellie Station, N.S.W. 26 Oct. 1967, 1 at dead rabbit, roadside near Walpolla Cr., Keera Station, Vict. 21 Sept. 1968, 1 attempting to catch fish surfacing in the late evening, flying low over the Lindsay R. and clutching into the water with one foot, Berribee Station, Vict. 31 May 1969, 1 at road-killed rabbit, near Moorna E. oxbow, N.S.W.

Accipiter cirrhocephalus

BH: 18 Mar. 1969 (see *E. tricolor* 18 Mar. 1969).

Hieraetus morphnoides

BH: 27 Sept. 1967, 1 bird flew from a *Callitris* pine carrying a long-tailed creature, possibly a lizard. It was immediately attacked by a Wedge-tailed Eagle. Both rapidly attained an estimated 300 m in a whirling 'dogfight', where a second Wedge-tail joined the attack. Little Eagle finally dropped prey animal. The second Wedge-tail dived very steeply and caught it, and flew off. Little Eagle attacked first Wedge-tail, which it had previously been avoiding. The two birds passed from sight to SW. 0.8 m W. of Moorna wool shed, Moorna Station, N.S.W.

M: 21 Apr. 1968, 1 flying at 450-600 m, gliding fast, directly away from approaching rainstorm. Moorna wool shed, N.S.W.

F: 31 May 1969, 1 a road-killed Stumpy-tailed Lizard *Trachysaurus rugosa*, Ana Branch bridge, Moorna Station, N.S.W. 5 Oct. 1969, 1 feeding on dead emu chick, near Butcher's Tank, Duncdin Park Station, N.S.W.

Aquila audax

Br: 27 Nov. 1968, recently used nest in broken red gum. Mummified bodies of 2 well-fledged young found nearby, shot by rifle. Salt Creek, Kulcurna Station, N.S.W. (see *H. morphnoides* 27 Sept. 1967).

BH: 29 Apr. 1968, pair flying over Morkalla, Vict., one low, one very high at estimated 850 m. This bird suddenly plummeted almost to ground level to join first bird, and both flew to NE. Within 5 minutes, a torrential rain storm began moving from W. and reducing visibility at ground level to a few metres. 19

May 1968 (see *F. peregrinus* 19 May 1968).

M: 9 May 1967, e. 27 mummified skeletons strung on H. B. Bailey's homestead fence, e. 7 km N. of Werrimul, Viet. 18 skulls, 5 whole skeletons collected. Bailey reported that these had been shot in roughly two batches in late February, and in mid-April, 1967, and that he shot eagles whenever possible. The April period was during his lambing time. Most had been shot with a rifle at a fair range, whilst on the ground at sheep enclosures. Most were immature birds (buff plumage), suggesting a massive culling of the previous season's fledglings. It also suggests a period of high mobility of fledglings—a dispersal from nest sites and a gathering at potential feeding sites.

F: 19 Oct. 1967, 2 adults plus 1 immature feeding on remains of a red kangaroo shot for dog meat the previous night. Dunedin Park Station, N.S.W. 2 *C. coronoides* also present, waiting for eagles to finish eating. 29 Apr. 1968 (see *C. mellori* 29 Apr. 1968). 24 Nov. 1968, 1 at road-killed rabbit, Lock 8 turnoff, Dunedin Park Station, N.S.W.

Haliaeetus leucogaster

Br: 31 Oct. 1968, recently occupied nest located, 12 m in red gum, backwater off Frenchman Creek, Winjellie Station/Lock 8 area, N.S.W.

BH: 1 Oct. 1967, adult attacked in flight by a pair of Whistling Kites. Sea Eagle rolled on back, extending legs and talons as each kite passed close by. Attack lasted 2 minutes before Kites desisted; a pair of Australian Ravens then chased Sea Eagle briefly. 3.2 km W. of woolshed, Moorna Station, N.S.W.

F: Apr. 1971, immature Sea Eagle attacked cockatoos feeding on the ground, Nulla Station, Lake Victoria, N.S.W. (Simpson 1972, p. 100).

Circus approximans

BH: 23 Oct. 1968 (see *S. vulgaris* 23 Oct. 1968). 22 Mar. 1969 at 1102 hr. prior to torrential rainstorm, one flew due N., low over sand dunes, directly toward approaching rain. Nulla Station, Lake Victoria, N.S.W. (see also *A. p. pacificus*, *C. leucosterna*, *H. nigricans* *E. tricolor* 22 Mar. 1969).

Family FALCONIDAE

Falco subniger

F: 28 June 1967, 1 pursuing House Sparrows through farmyard and house environs, Seadding's homestead, near Lock 8, N.S.W.

F. longipennis

BH: (see *F. cenchroides* 1 Oct. 1967).

F. peregrinus

23 Feb. 1967, an adult flying very high, estimated 600 m, at very high speed and with very frequent twists or rolls; course fairly direct, SW. Brown's Paddock, Keera Station, Viet. 19 May 1968, pair chasing pair of Wedge-tailed Eagles, diving very close, then climbing steeply and repeating dives several times. Chowilla Dam Construction site, Bunyip Reach, S.A.

F. cenchroides

Br: 18 Nov. 1968, 2 flying young being fed by 2 adults, Merbein Cliff, Viet. Food brought appeared to be large insects.

BH: 1 Oct. 1967, pair chasing and apparently playing with a Little Falcon. A Kestrel and the falcon flew parallel, wing tip to wing tip briefly, then both Kestrels began series of rapid stoops at the falcon, without attempting contact. Moorna E. oxbow, N.S.W. 23 Oct. 1968 (see *G. tibicen* 23 Oct. 1968). 25 Mar. 1969 (see *A. p. pacificus* 25 Mar. 1969).

Order GALLIFORMES

Family PHASIANIDAE

Coturnix pectoralis

F: 30 Oct. 1968, 1 flushed from beneath large *Nitraria* bush in erosion gully, Talgarry Station, Lake Victoria, N.S.W. The ground was strewn with seeds from wild turnip *Brassica tournefortii*. Feeding inferred, but not witnessed.

Order GRUIFORMES

Family PEDIONOMIDAE

Pedionomus torquatus

M: 4 Oct. 1969, 1 bird among young *Brassica tournefortii*, running along vehicle wheel track, alongside S. fence, Oak Hills paddock, Nulla Station, N.S.W. Several clear views obtained by T. A. Darragh and author. Status of the species in the district quite unknown, but probably rare (distribution summary in Frith

1969, p. 149, comments in Wheeler 1967, p. 11, and in Condon 1969, p. 41).

Family RALLIDAE

Tribonyx ventralis

BH: 26 Nov. 1968, 36 feeding in tight group on dry flats at Lake Merretti, S.A. All went across 80 m of open ground to drink at lake edge, then returned together and resumed feeding in same area, 1440 hr.

M: 26 Sept. 1968, 1 at roadside puddles fringed with dense *Eragrostis australasica* Keera Station, Vict. 28 Oct. 1968, 13 skulking beneath large *Nitraria* bushes, Lake Victoria pump shed, Talgarry Station, N.S.W. (see also *P. nigricans* 28 Oct. 1968). 25 Nov. 1968, 7 in dense *Muehlenbeckia* beneath red gums, Nampoo Station, N.S.W. 27 Nov. 1968, 7 still present, same locality.

Gallinula tenebrosa

BH: 23 May 1969, several gave alarm calls as an Eastern Water Rat *Hydromys melanogaster* approached a dense reed bed after swimming from the island, NW. corner of Moorna E. oxbow, N.S.W.

Porphyrio porphyrio

Br: 31 May 1969, adult on and adding to a nest-shaped structure, water edge at margin of dense reeds, small island in Moorna E. oxbow, N.S.W. Not determined whether real nest, or a temporary platform.

Fulica atra

M: 21 Mar. 1969, estimated 3000 at Moorna E. oxbow, N.S.W. 31 May 1969, 300+ same locality.

Order CHARADRIIFORMES

Family CHARADRIIDAE

Vanellus miles novaehollandiae

Br: 26 Sept. 1967, nest with 2 eggs, sandy, lightly grassed patch on W. bank, Moorna E. oxbow, N.S.W. Second nest with 2 eggs on level ground 140 m from water, above Moorna E. oxbow. Nest in light cover of bluebush and grasses, 0.25 km SW. of first nest.

F: 17 June 1968, pair wading in roadside puddle, possibly catching insects off the water surface. Ned's Corner Station, Vict.

V. tricolor

Br: 25 Sept. 1968, adult with 1 well-grown chick on ridge with stand of *Callitris*, W. of Ned's Corner homestead, Vict. 26 Sept. 1968, adult with 2 young, just flying, dam in Lybra Back Paddock, Keera Station, Vict. 23 Oct. 1968, pair adults with 4 large downy young near salt lake, Talgarry Station, N.S.W.

Charadrius alexandrinus ruficapillus

BH: 23 Oct. 1967, a male on top of broad sand dune area, 30 m above Lake Victoria, and 0.4 km inland. A most exposed position—no nest found. Site 7, Nulla Station, N.S.W.

M: 24 Apr. 1968, some 100+ actively feeding amongst patches of slimy green algae on wet sand immediately beside water edge, NE. beach of Lake Victoria, Nulla Station, N.S.W. 16 Mar. 1969, 8 on dry red claypan among *Kochia* and *Atriplex vesicaria* bushes, at dam c. 3 km W. of Nulla Station woolshed, N.S.W.

C. melanops

BH: 28 Apr. 1968, 1 walking between small *Kochia* and *Atriplex* bushes on cliff edge, 18 m above Lindsay R., Berribee Station, Vict., 1640 hr. Unusual situation for this species.

F: 29 June 1968, 1 feeding at edge of large roadside puddle, 1.5 km S. of Lindsay R., Ned's Corner Station, Vict.

C. cinctus

F: 23 May 1969, 1 feeding along margins of extensive rainwater puddles, on clay pans amid *Kochia* bushes, 1 km W. of Moorna Station woolshed, N.S.W. The margins of the puddles were littered with bodies of small beetles and termites, but not known whether dotterel feeding on these.

Peltohyas australis

M: 28 Oct. 1968, flock of 40-50+ on series of small claypans between large bare sand hummocks, and *Nitraria* bushes, 3.2 km inland from NE. area of Lake Victoria, Nulla Station, N.S.W. Birds spread out widely, extremely wary and flew about as vehicle approached. Some appeared to be feeding among tiny *Kochia* bushes at margins of claypans. 30 Oct. 1968, 15 recorded same locality as above.

Family LARIDAE

Larus novaehollandiae

BH: 24 Apr. 1968 (see *P. carbo* 24 Apr. 1968).

F: 25 Apr. 1968, 500 with feeding group of *P. carbo*, Talgarry Station, Lake Victoria, N.S.W.

Chlidonias hybrida

M: 20 Sept. 1968, 1 flying over billabong, near causeway on Sturt Highway leading to Paringa Bridge, via Renmark, S.A.

Hydroprogne tschegrava

BH: 23 Oct. 1968, 7 at salt lake 1.6 km E. of Lake Victoria, N.S.W., on Talgarry Station 1800 hr. Birds apparently intending to roost on small islets of salt-encrusted mud in centre of lake. 28 Oct. 1968, 58 at salt lake for night, 1910 hr. Talgarry Station, N.S.W. 29 Oct. 1968, 50 present same locality, 1925 hr. 18 Mar. 1969, 21 present same locality, 1740 hr. 26 May 1969, 20 gathered at roost site at salt lake, 1645 hr. c. 1.5 hr. prior to sunset, same locality. 4 Oct. 1969, 25 at roost site, salt lake, Talgarry Station, N.S.W. 1740 hr.

Order COLUMBIFORMES

Family COLUMBIDAE

Geopelia striata

F: 28 Sept. 1967, several pairs feeding along remains of old fodder trail laid during hand-feeding of sheep, Murray River bank, near Bone Gulch, Moorna Station, N.S.W.

G. cuneata

F: 28 Oct. 1968, 1 on ground, feeding beneath dense clump of *Nicotiana* bushes, foreshore Lake Victoria, Talgarry Station, N.S.W.

Phaps chalcoptera

BH: 24 June 1968, 8 birds in loose association drinking at rainwater puddle on roadside, margin of *Callitris* pine ridge, 1700 hr., W. end of Berribee Island, Vict.

F: 28 Oct. 1968, 2 feeding beneath huge peppercorn tree, foreshore N.E. Lake Victoria, Nulla Station, N.S.W. Only large tree for 1 km in any direction.

Ocyphaps lophotes

F: 24 June 1967, 8 feeding on ground beneath *Muehlenbeckia cunninghamii* bushes, windmill, Keera Station, Vict. 5 Oct. 1967, pair feeding, apparently on seeds of dried and split melons *Cucumis myriocarpus*, Keera Station homestead, Vict. 25 Apr. 1968, pair feeding, apparently on seeds of *Chenopodium* sp., Tareena Station homestead, N.S.W. 24 Oct. 1968, 2 feeding on loose seeds of *Brassica tournefortii*, erosion gulches of lunette, Lake Victoria, Talgarry Station, N.S.W. 25 Nov. 1968, 17 in group feeding beneath dense *M. cunninghamii* bushes, Kulcurna Station, N.S.W.

Columbia livia

Br: 18 Nov. 1968, several nests with incubating birds beneath Murray River bridge from Yelta, Vict., to Curlwaa, N.S.W.

Order PSITTACIFORMES

Family PSITTACIDAE

Cacatua galerita

F: 27 Sept. 1967, 4 plus 6 galahs feeding on heads of *Helipterum floribundum*, growing in oatfield, 180 m N. of Fisherman's Cliff, Moorna Station, N.S.W. 18 May 1968, 40+ feeding in wheatfield, Paringa, S.A. 20 Sept. 1968, 32 plus 2 *C. roseicapilla* feeding on fruits of *Atriplex visicaria*, Bone Gulch, Moorna Station, N.S.W. 26 Sept. 1968, 8 feeding on fruits of *A. vesicaria* along Lock 9, Lake Cullulleraine channel, Kulnine Station, Vict. 23 July 1969, 15 plus 10 *C. sanguinea* and 3 *C. roseicapilla* feeding in close group on seeds of dried melons *Citrullus lanatus*, Dunedin Park Station, N.S.W.

C. leadbeateri

F: 1 Sept. 1968, 30+ in wheatfield, pulling up germinated plants and presumably nipping off the remains of seed, Paringa, S.A. 22 Oct. 1968, 3 feeding on *Helipterum floribundum*, teasing seeds from floret bases, 1.5 km W. of Moorna Station woolshed, N.S.W. 28 Oct. 1968, 22 feeding on *H. floribundum* florets, 6 *C. roseicapilla* also, foreshore Lake Victoria, Nulla Station, N.S.W. 30 Oct. 1968, 35 plus 10 *C. roseicapilla* feeding on same flower species, same locality. 29 May 1969, 27 feeding on

seeds of dried small melons *Cucumis myriocarpus*, Tareena Station, N.S.W.

C. sanguinea

F: 1 Oct. 1967, 10 disturbed feeding on floret bases of *Helipterum floribundum* and seeds of melons, *Cucumis myriocarpus*, 0.5 km W. of Moorna Station woolshed, N.S.W. 26 Oct. 1968, 32 plus 12 *C. roseicapilla* feeding on florets of *Helipterum floribundum*, Lake Victoria frontage, Nulla Station, N.S.W. 19 Nov. 1968, 60+ feeding over oatfield, 1700 hr., and slowly moving under red gums along Murray R. bank. Flock later roosted immediately opposite in trees on Keera Station, Vict. Oatfield under stubble, Moorna Station, N.S.W. 23 July (see *C. galerita* 23 July 1969).

C. roseicapilla

BH: 28 Apr. 1968, 2-300 birds noted flying at estimated 300-600 m, calling loudly and in loose flock, comprising mostly pairs, circling and flying in all directions. General trend to NE. Many pairs began swooping dives and roll-overs, maintaining station in relation to each other. Then whole flock suddenly dropped down, in a mass of twisting, near vertical dives, right to tree-top level before pulling out of dives and alighting in crown foliage of red gums; then flying in a flock down river to W. Total time 2-3 minutes. Near Berribee Station homestead, Vict.

M: 23 June 1968, flock of 400 flying S. toward open country from Berribee Station homestead area, Vict. First light, probably to feed for day.

F: 27 Sept. 1967 (see *C. galerita* 27 Sept. 1967). 5 Oct. 300+ feeding in wheatfield, Sturt Highway, 4.8 km E. of Lake Cullulleraine, Vict. 22 Apr. 1968, 50 feeding on sprouting wheat, Dunedin Park Station homestead, N.S.W. 1 Aug. 1968, 21 feeding, apparently on fruiting bodies of *Atriplex vesicaria*, at roadside S. of Lake Merretti, S.A. 20 Sept. 1968 (see *C. galerita* 20 Sept. 1968). 26 Oct. 1968 (see *C. sanguinea* 26 Oct. 1968). 28 Oct. 1968 (see *C. leadbeateri* 28 Oct. 1968). 30 Oct. 1968 (see *C. leadbeateri* 30 Oct. 1968). 21 Mar. 1969, 400+ in oatfield, feeding amid stubble, Fisherman's Cliff, Moorna

Station, N.S.W. 23 July 1969 (see *C. galerita* 23 July 1969).

Nymphicus hollandicus

Br: 27 Oct. 1968, pair with 1 large young in hollow of mallee *Eucalyptus*; axe marks about hollow indicate may have been opened by nest-robbers in a previous season, 6.4 km NW. of Nulla Station homestead, N.S.W.

M: 20 Mar. 1969, 17 in tight flock, NE. at 60 m, calling loudly, 1215 hr., near salt lake, Talgarry Station, N.S.W.

F: 31 Oct. 1968, 7 feeding on seeds in bases of a white fluffy-topped grass growing amid *Kochia* bushes, woolshed area, Nulla Station, N.S.W. 20 Nov. 1968, 60+ in *Casuarina* trees, Dunedin Park Station, N.S.W., and feeding among *Kochia* bushes beneath the trees. Food not determined. 27 July 1969, flock of 50 feeding on ground amid *Kochia* bushes, SE. area of Dunedin Park Station, N.S.W.

Polytelis anthopeplus

M: 23 Apr. 1967, several small groups flying high, S. from red gum forest above shrub steppe toward Millewa country, presumably to feed, 4 km W. of Lake Walla Walla, Ned's Corner Station, Vict.

F: 1 Sept. 1968, two groups, 10 and 18, feeding on roadside weeds (not identified) in shallow drains and culverts under the Vict./S.A. border fence, Paringa road.

Platycercus elegans flaveolus

Br: 21 Sept. 1968, 1 adult repeatedly entering hollow spout of red gum, 21 m over Lindsay River, Berribee Station, Vict.

M: 23 June 1968, flock of 18 in red gums, near punt on Lindsay R., Berribee Station, Vict.

F: 26 June 1967, pair feeding on red gum seeds, opening gum nuts and dropping a steady rain of fragments, Fisherman's Cliff, Moorna Station, N.S.W. 19 Nov. 1967, 2 feeding on ground in centre of irrigated lucerne (alfalfa) paddock, Berribee Station, Vict. 20 June 1968 (see *B. barnardi* 20 June 1968).

Barnardius barnardi

M: 23 June 1968, 10 in loose group, red

gums and black box area, near Berribee Station homestead, Vict. This species moderately rare within the river marginal forest of the two eucalypt species, but common on river banks where Millewa Land System immediately abuts Lindsay Island Formation (Rowan and Downes, 1962), and where marginal forest is both narrow and mixed with e.g. *Casuarina*, *Acacia* trees.

F: 30 Apr. 1968, pair plus 4 *P. haematonotus* feeding on an unidentified daisy bush at roadside, Berribee Station, Vict. 20 June 1968, 4 plus pair *P. e. flaveolus* feeding in close group on red gum flowers which were almost dead, Berribee Station, Vict. 29 June 1968, pair feeding on ground beneath dense *Muehlenbeckia* bushes. One bird was scratching small holes and appearing to eat from them. Swampy area adjacent to ephemeral water channel, Berribee Station 'Big Island', Vict. 19 Nov. 1968, 12 feeding on spilt chaff, paddock corner near Fisherman's Cliff, Moorna Station, N.S.W., where sheep sometimes hand fed. 20 Nov. 1968, 8 plus 6 *N. haematogaster*, feeding in close association on ground beneath *Casuarina* trees, Talgarry Station second dam, N.S.W.

Psephotus haematonotus

BH: 24 Oct. 1968 (see *P. nigricans* 24 Oct. 1968).

M: 31 May 1969, flock of 150+ ESE. toward Frenchman Creek red gum forest from inland open country, 0930 hr. Site 10, Dunedin Park Station, N.S.W.

F: 16 June 1967, 5 feeding on *Nitraria* fruits, Lybra paddock, Keera Station, Vict. 30 Apr. 1968 (see *B. barnardi* 30 Apr. 1968).

Northiella haematogaster

F: 27 Sept. 1968, 4 feeding on and beneath Bluebush (*Kochia pyramidata?*), beneath Black Box trees, Walpolla Cr., Keera Station, Vict. 20 Nov. 1968 (see *B. barnardi*, 20 Nov. 1968).

Melopsittacus undulatus

M: 28 Sept. 1968, many small flocks 35, 10, 7, 11, 3, 1, 15, 6, 4, 6, 18, 12 all moving SE., low to ground downwind from blustery NW. wind, f3-5. Humid, hot. Most birds calling

loudly. Observer static. Brown's Paddock, Keera Station, Vict. This movement of birds was recorded as continuing for two days on a very broad scale in NW. Victoria. General trend to E. Many similar small flocks, and a few numbering 100+ were seen flying E. on 29 Sept. 1968, over mallee country S. of Mildura on Calder Highway, at Merbein, Yatpool, Hattah, Ouyen, Sea Lake. No other species were recorded moving in this period. 24 Oct. 1968, 60+ flying E., low, downwind, 0820 hr. Talgarry Station homestead, N.S.W. 15 Mar. 1969, 50 in tight flock, NW., 1915 hr., Nulla Station woolshed, N.S.W. 18 Mar. 1969, 14 in flock, travelling high, coming in from over Lake Victoria, and alighting in *Nicotiana* bushes on sand dunes. Presumably had crossed lake.

F: 4 Oct. 1969, 200+ feeding on ground beneath small *Kochia* bushes, Nulla Station woolshed, N.S.W.

Order CUCULIFORMES

Family CUCULIDAE

Cuculus pallidus

BH: 23 May 1969, 3, flying in very agitated manner in tight pursuit of each other, much changing of position and loud calls. All birds in same plumage. Moorna E. oxbow, N.S.W. 27 May 1969, 1 bird perched silently 50 cm from a continuously calling Narrow-billed Bronze Cuckoo on same branch of *Casuarina* tree, near Cass's Camp, Talgarry Station, N.S.W. Two birds remained for 8 minutes before Bronze Cuckoo flew off. 27 May 1969, same locality, a single bird flying fast, low, in a tumbling flight with tail spread, then complete roll-over executed in level flight.

Chrysococcyx osculans

BH: 25 July 1969 (see *M. virescens* 25 July 1969).

F: 22 Oct. 1967, 1 calling intermittently from tall red gum. Twice flew down to seize furry caterpillars from foliage of *Muehlenbeckia* bushes about base of tree, returning to bare protruding branch to eat them. Site of former hotel, N. end of Lake Victoria, Nulla Station, N.S.W. 18 Mar. 1969, 1 perched on topmost

bare branch of large *Casuarina*, repeatedly flying up and hawking small flying insects, possibly winged ants, in a honeyeater-like manner. Nulla Station woolshed, N.S.W.

C. basalis

BH: 27 May 1969 (see *C. pallidus* 27 May 1969).

M: 27 July 1969, 3 together in small *Atriplex* bush 3-4 km NE. of inlet regulator, Frenchman Cr., Dunedin Park Station, N.S.W., on salty flats.

F: 24 Oct. 1968, 2 feeding on ground amid dense *Helipterum floribundum* and *Brassica tournefortii*, but each bird perched on a bare *Nicotiana* branch above the lower herbage level to eat small, smooth, grey caterpillars. Lake Victoria frontage, Talgarry Station, N.S.W.

Order CAPRIMULGIFORMES

Family PODARGIDAE

Podargus strigoides

Br: 27-29 Aug. 1968, nest with 2 eggs, fork of mallee gum, 2.5 m off ground, 8.5 km NW. of Nulla Station homestead, N.S.W. (Graeme Withers, pers. comm.). Adult brooding 2 young, 22.0 cm long, 3.5 m above ground in fork of black box. Nest of lignum and black box twigs, plus some green speargrass tips. (Pl. 35, fig. 2). Clump of trees in shallow ephemeral drainage basin, c. 3.2 km SE. of Nulla Station homestead, N.S.W.

Family AEGOTHELIDAE

Aegotheles cristatus

F: 17 Apr. 1968, 1 catching moths on bitumen road surface, possibly insects damaged by traffic, Tucker Cr. bridge, Wentworth, N.S.W., 2000 hr. 27 Oct. 1968, 2 on grassy patches on ground at roadside, about 4.8 km apart. 1910 and 1935 hr. Each bird leapt into the air and away as vehicle slowly approached. Search of second locality gave no clue to behaviour. S. of Nulla Station, N.S.W. 3 Oct. 1969, 1 with large moth, near *Casuarina* trees, 0.5 km No. of Talgarry homestead, N.S.W., 2030 hr.

Order APODIFORMES

Family APODIDAE

Apus pacificus pacificus

BH: 22 Mar. 1969, 100+ flew fast and low, in direct line to SW. in fairly tight group, across sand dunes and out over Lake Victoria, Nulla Station, N.S.W. 1104 hr. Torrential rain approaching from NNW. (see also *C. approximans*, *C. leucosterna*, *H. nigricans*, *E. tricolor* 22 Mar. 1969) 1206 hr. Heavy rain again approaching from N. and local intense rainfall commenced nearby; 4 swifts plus 10 Tree Martins flew very fast NE., speeding through the fast-closing gap between the two rainstorms, 1558 hr.; 6 swifts plus 18 Tree Martins in close association flying at 50m NW. to pass on W. side of rainstorm rapidly approaching from N. and NE. Main road between Talgarry Station and Nulla Station homesteads, N.S.W. One swift flying lower, clocked at approx. 64 km per hr. on Land Rover speedometer. 23 Mar. 1969, 1700 hr., after clear, warm, calm day, light wind f-2-3, W.-SW., many small groups of swifts assembled over dunes and shoreline of Lake Victoria, Nulla Station, N.S.W. A total of some 400 was estimated. These fed and drifted about from 10 m to 600 m, some aerial chases of pairs and trios observed. By 1845 hr., about 200 in sight in same area, but feeding activity ceased, while calling and chasing activity increased. A few Tree Martins feeding low over lake, and several evening flights of White-backed Swallows (cf. *C. leucosterna* 26 Jan. 1968) in groups of up to 10 birds were observed over erosion gulches known to contain burrows, 1904 hr. All White-backed Swallows disappeared into gulches and did not re-emerge; 300+ swifts in sight, as additional small groups came in from E. and NE. Main flock by now slowly rising in air, drifting birds in loose groups continuously dissociating from flock, moving E. then returning at higher level. Most birds gliding slowly, much shrill calling—a sound comparable to a simultaneous whistling and buzzing with slight downward inflection. Brief flaps and steep glides, then gliding with wings extended and tails slightly fanned. Some birds in tight pairs, one above the other and a little behind, 1908 hr. Many hundreds of swifts in sight, mostly at estimated 300 m, and spread along the line of sand dunes as far to N. as

could be seen with 16 x 50 mag. binoculars in the failing light. Birds now tending to drift N., 1912 hr. Light breeze developing at observer's position, force 1 N. Birds still rising, those overhead now seen only with binoculars, but calls plainly heard, 1915 hr. All visual contact lost but calls still plainly heard overhead. These continued to after 1940 hr. Calm clear night, cool, bright moonlight.

The above notes are interpreted as an example of Fork-tailed Swifts rising at dusk to roost overnight in the air. An extensive literature exists in Europe for the Swift *Apus apus*, and a comparison of the above, and other Australian observations will be presented in another paper, now in preparation for the Swift Survey, Victorian Ornithological Research Group. 25 Mar. 1969, 1420 hr. 300+ came from N., circled for several minutes over sand dunes at Lake Victoria, Nulla Station, N.S.W., and many drank from series of broad, shallow rainwater puddles in hollows between massive *Nitriaria* bushes, on E. side of sand dunes. Birds skimmed low over water surface, just dipping beaks, then lifting off for others to follow through on the same course. Estimated 100+ Tree Martins travelling with them, but although these alighted some distance off on sand dune, none drank. One martin picked up a small, dead *Nicotiana* leaf, flew into the air a few metres with it, then dropped it. Both species departed together, moving SSE. A Nankeen Kestrel that passed by at this time was mobbed by birds of both species and to escape attention, alighted in a *Nicotiana* tree.

Order CORACIIFORMES

Family ALCEDINIDAE

Dacelo novaeguinae

Br: 30 Sept. 1967, nest in high spout of red gum, Triple Swamp, Moorna Station, N.S.W.

BH: 25 Nov. 1968 (see *H. sanctus* 25 Nov. 1968).

Halcyon pyrrhopygius

F: 20 Nov. 1968, 1 caught small lizard in erosion deflation hollow, E. of main sand ridge of Lake Victoria luncte, Talgarry Station, N.S.W. Bird perched dead *Nicotiana* bush,

struck lizard many times against small branch, and finally swallowed it.

H. sanctus

BH: 20 Nov. 1967, adult pursued a Brown Tree-creeper that alighted in same black box tree—nest hole competition? Berribee Station, Vict. 25 Nov. 1968, 1 pursuing Kookaburra, Nampoo Station, N.S.W.

F: 21 Mar. 1969, 1 with large dragonfly, Moorna E. oxbow, N.S.W.

Family MEROPIDAE

Merops ornatus

Br: 28 Oct. 1968, adult feeding a flying young, Cass's Camp, Nulla, N.S.W. (see feeding note below).

M: 23 Feb. 1967. 200+ circling S. 120 m over Murray River at Springcart Gully, 9.6 km S. of Renmark, S.A.; 28 Oct. 1968, two groups of 6 and 8, in fast flight over sand dunes of Lake Victoria, N.S.W. Groups 30 seconds apart, N. and NE., 1020 hr., 80 m-100 m; SW. to S. wind, f2-4; cool morning. Birds in very tight flocks, very rapid minor changes of direction, also of altitude, and of relative position of each bird within the flock. Much loud calling. Heavy rain, cold winds in SW. and Central Vict., 25-28 Oct. 1968. 25 Nov. 1968, 4 flying SW., 60 m, 1440 hr., calm, sunny, 21°C., Nampoo Station, N.S.W.

F: 28 Oct. 1968, an adult feeding one flying young. Adult caught small dragonfly, commenced 'mandibulating' it in its beak, and dropped it still alive. A Willie Wagtail dived at the injured insect, but the Rainbow-bird was quicker and retrieved it. The beak movements were commenced again, and eventually the dead and de-winged insect was fed to the young bird. Cass's Camp, Nulla Station, N.S.W.

Order PASSERIFORMES

Family ALAUDIDAE

Mirafra javanica

BH: 18 Mar. 1969, 1 bird (identity of species not certain) in aerial display over sand hills, 1 km inland from Lake Victoria, Talgarry Station, N.S.W. Bird flying up, then dropping vertically, wings extended, tail elevated, to near

ground level, repeating the manoeuvre twice more. Considered to be Bushlark, but viewed from considerable distance with binoculars; may have been Skylark, or (?) Rufous Songlark.

M: 7 Oct. 1969, 2 + 6 together, in tall plumed grasses amid scattered mallee eucalypts on flat country, Dunedin Park/Moorna Station boundary fence, N.S.W.

Family HIRUNDINIDAE

Hirundo tahitica neoxena

Br: 21 Apr. 1967, nest with 2 eggs on lampshade in outhouse, Keera Station, Vict. 29 Jan. 1968, 2 nests, each with 2 eggs, in prison cell of deserted Cal Lal Courthouse, N.S.W. 20 Sept. 1968, nest with 5 eggs, barn at Kulcurna Station homestead, N.S.W. 21 Sept. 1968, nest with 3 small young beneath Forestry Dept. punt, Lindsay R., Berribee Station, Vict. Adults flying with food to young as punt moved to and fro. 20 Nov. 1968, nest with 1 small young on shade of recently installed fluorescent light, Moorna Station woolshed, N.S.W. 23 May 1969, nest with 2 well-fledged young in outhouse, Moorna Station homestead, N.S.W.

BH: 30 Apr. 1968, 18 flying low, repeatedly hovering over, then alighting and immediately taking off again, on a broad claypan, bare except for a few small black stones and scattered sheep faeces. This swirling series of alightings and take-offs continued for 3 minutes. Very light rain falling. Behaviour rather similar to that recorded for Tree Martins (Mollison and Green 1962, Simpson 1964). River Road, Berribee Station, Vict., 0195 hr. 24 Oct. 1968 (see *P. nigricans* 24 Oct. 1968).

M: 18 Apr. 1968, 300+ feeding low over water surface, Moorna E. oxbow, N.S.W. 24 Apr. 1968, several hundred flying NE. over Kulcurna Station homestead, N.S.W., low to ground, much calling, 1830 hr.

F: 25 June 1967 (see *P. nigricans* 25 June 1967). 1 Aug. 1968 (see *C. leucosternum* 1 Aug. 1968).

Cheramoeca leucosternum

Br: 19 Oct. 1967, 5 apparently occupied nest burrows in deep erosion gulch (9/10N. of pegged sequence), Lake Victoria, on Nulla Station, N.S.W. Adults bringing food to two of

the burrows. Tracks and scratches of small goanna (probably *Varanus gouldii*) observed to enter one burrow (Simpson this *Memoir*).

BH: 26 Jan. 1968, 30-40 flying about in dense flock over W. end of Kulcurna Station cliffs, N.S.W., late dusk, 1945-2000 hr. Flock viewed from 0.5 km, initially mistaken for bats. Flock rising and diving continuously, suddenly disappeared. 30 Jan. 1968, evening flight before roosting again observed, with observer at roosting site. Birds preparing to roost in group of burrows at W. end of Kulcurna Station cliff, N.S.W. Breeding may have been occurring in burrows but not evidence noted, 1950 hr. Birds flying in pairs and groups of 5-7 in a wide circling flight; travelling up to 0.5 km from colony in a loose flock, continuously merging to dense flock, and immediately dividing into small groups of 3-7 and pairs again. Arriving back near the colony, the loose group repeatedly flew up to the burrow entrances, rose into the air steeply above the cliff edge, and dived down again to the colony. A count of 47 birds was made. Finally, at final dusk and within a few seconds of each other, all the birds went to roost, sweeping in from over the river at tree top level and entering burrows in groups of 4-8, timed at 2014 hr. After a few minutes, the author fired a shot at the cliff to deliberately disturb the birds. They flew out immediately, made a couple of tight turns close to the cliff top in a dense flock, and quickly and quietly re-entered the burrows, in small groups of 4-8 as before. During the earlier flights much shrill calling was heard.

22 Mar. 1969 (see *A. p. pacificus* 22 Mar. 1969). 24 May 1969, two burrows in banks of erosion gulch where large block of sand had fallen away from the bank. One burrow complete; 8 swallows entered it in late evening. Other burrow apparently newly commenced, enabling possible working technique to be deduced. A small centrally placed area on the lower portion of the new excavation is apparently a working area. The bird probably stands on this, and with bill or feet, probably the latter, scratches at sand each side with a downward and outward motion. Deep grooves are plainly visible. The burrow is therefore con-

tinuously developed from the top and upper sides, the lower sides and central portion following the upper inclined working face. White-backed Swallow burrows always tend to have a vertical rectangular shape, at least in the sandy substrates inspected in this district. The birds were not observed working at the excavation. The description is a deduction awaiting confirmation. Erosion gulch 0.75 km NNW. of J. May's camp at windmill, Noola Station, N.S.W. 25 May 1969, 0730 hr. 2 birds, both in adult plumage, meeting beak to beak in mid-air, then gliding parallel for a 20 second period, calling very excitedly. Near shore of Lake Victoria, Noola Station, N.S.W.

F: 1 Aug. 1968, 25-30 hawking low over slightly wind-ruffled surface of Lake Merretti, S.A., together with some 200+ *H. t. neoxena*.

Petrochelidon nigricans

Br: 1 Oct. 1967, 2 pairs with nests in hollow spouts of adjacent red gums beside Murray R., Fisherman's Cliff, Moorna Station, N.S.W. A group of 6 *Struthidea cinerea* arrived in these trees to roost at 1800 hr. The Tree Martins appeared most upset by this invasion, and repeatedly dived at individual Apostle-Birds as they moved about and finally settled in one of the trees (see *S. cinerea* 1 Oct. 1967).

BH: 24 Oct. 1968, following a 2 hr. period of heavy rain, some 60 Tree Martins and flock of 24 Red-backed Parrots became suddenly very vocal as rain eased. Birds spent a few minutes in active preening, before departing from red gum saplings where they had been sheltering during rain and high winds (see section on Feeding Associations). Shortly after cessation of rain, several groups (11, 8, 9, plus one Welcome Swallow) were seen landing on different sandy patches and extensively preening wings and breasts. Some shuffled low over the wet sand as though 'dust bathing' without dust. Lake Victoria at Talgarry Station pump shed, N.S.W. 28 Oct. 1968, a Black-tailed Native Hen was attacked by 5 martins as it ran and flew low across ground to dense cover at Talgarry pump shed, Lake Victoria, N.S.W. (see *T. ventralis* 28 Oct. 1968). 22 Mar. 1969, 60+ and 20+ White-backed Swallows flying together in loose association, and calling very

agitatedly as torrential rainstorm approached from NNW., 1106 hr. At 1110 hr. as rain commenced, White-backed Swallows all entered burrows in erosion gulch and martins huddled in groups on branches of *Nicotiana* trees by lake shore. Rain lasted 10 min. or so; both species took flight again. Lake Victoria, Nulla Station, N.S.W. (see *C. approximans*, *A. p. pacificus*, *E. tricolor* 22 Mar. 1969). 22 Mar. 1969 (see *A. p. pacificus* 22 Mar. 1969). 25 Mar. 1969 (see *A. p. pacificus* 25 Mar. 1969). 26 Mar. 1969, 100+ in flock on sand dunes, many preening, others shuffling over surface apparently picking up small objects. It could not be determined what these were, or what was happening to them. Inspection revealed no small objects present other than sand grains of very fine size. Considered that the pick-up activity might be a display movement of some kind (cf. *H. neoxena*, 30 Apr. 1968 and references) without actual physical movement of objects.

M: 23 Nov. 1967, numerous groups, mostly travelling below 60 m, moving slowly E. 1845-1945 hr. Feeding across paddocks as travelled. Humid, warm, calm, Keera Station homestead, Vict. 19 Nov. 1968 (see *A. personatus* 19 Nov. 1968). 19 Nov. 1968, 1820 hr. 150+ on telephone lines, N. side Moorna E. oxbow, N.S.W. None present at locality in morning. 18 Mar. 1969, 1052 hr. 70-100 in widely-spread flock flew E., direct flight, calling loudly. Heavy rain from W. began 1103 hr. At 1215 hr. 50 birds flew W., calling loudly, after rain had ceased. Sand dunes, Lake Victoria, Nulla Station, N.S.W.

F: 25 June 1967, several, with several Welcome Swallows, tightly circling and hawking small insects very close to foliage of red gums, on lee side out of strong wind, levee bank, Frenchman Cr., Winjellie Station, N.S.W.

P. ariel

Br: 26 June 1967, many old nests high on Fisherman's Cliff, Moorna Station, N.S.W. Linings of some composed of oat stems from adjacent oatfield, of water couch grass from river bank, and of feather and wool scraps. 28 June 1967, a single empty nest, together with

one nest of *Hirundo neoxena*, on underside of leaning and partly hollow red gum, Wangumma Station, N.S.W. 25 Sept. 1967, 19 nests under construction near top of erosion gulch at Fisherman's Cliff, Moorna Station, N.S.W. 29 Jan. 1968, old martin nests occupied by House Sparrows (see *Passer domesticus* 29 Jan. 1968). 23 Nov. 1968, 4 nests, apparently containing young, 3-4 m down from top of Yelta cliff, Murray R., Vict. (see *P. domesticus* 23 Nov. 1968). 25 Nov. 1968, adults building, and bringing food to, group of nests on Kulcurna Station cliff, N.S.W. (Pl. 35, fig. 5).

BH: 27 Sept. 1967, birds flying over cliff above nests at Fisherman's Cliff, Moorna Station, N.S.W. Very disturbed by observer's presence (see 25 Sept. 1967 above). Always remain high whilst any person within 80 m before returning to nest areas.

Family MOTACILLIDAE

Anthus novaeseelandiae

F: 22 Feb. 1967, 1 moving about beneath a very dense overhead cover of dead *Callitris* and *Casuarina* trees—a most unusual situation. Lybra Baek Paddock, Keera Station, Vict.

Family CAMPEPHAGIDAE

Coraciina novaehollandiae

M: 24 Apr. 1967, 5 + 8 + 5 small groups flying NW. through tree tops, calling at times. Keera Station homestead, Vict. 23 Mar. 1969, flock of 11, SW. at tree-top level, through red gum forest along Murray R., Moorna Station woolshed, N.S.W.

C. robusta

M: 18 Nov. 1968, 1 in river red gums, Lock 10, Wentworth, N.S.W. Rare in district; assumed straggler or bird moving through.

Lalage sueurii

BH: 26 Sept. 1968, pair, plus pair Willie Wagtails, plus 11 White-winged Choughs, all flying at and scolding a Gould's Goanna, *Varanus gouldii* which was moving through litter beneath red gums, Walpolla Creek, Keera Station, Vict. 19 Nov. 1968, male repeatedly swooping at and vigorously pursuing 2 White-plumed Honeyeaters that entered the same red

gum. Between each of several chases, Triller returned to topmost bare branch of the tree and called loudly; call answered similarly from long way off. Bone Gulch, Moorna Station, N.S.W.

Family TIMALIIDAE

Pomatostomus superciliosus

Br: 30 Oct. 1968, adult at nest with 3 young; nest situated 2 m in *Acacia* tree, and composed of *Casuarina* twigs, entrance to SE., lined with wool, feather and fine grasses. Cass's Camp area, Talgarry Station, N.S.W.

F: 23 Sept. 1968, 6 feeding intently on ground beneath dense *Muehlenbeckia* bushes, margin of Lake Walla Walla, Ned's Corner Station, Vict.

P. ruficeps

BH: 21 Oct. 1967, flock of 6 packed themselves into one of several stick 'nests' in *Casuarina* clump (Pl. 35, fig. 3) late at dusk. Communal roosting apparently a feature of this species. Cass's Camp, Talgarry Station, N.S.W.

F: 30 Sept. 1967, small group feeding beneath and through dense *Muehlenbeckia cunninghamii* bushes. Rarely recorded in such a habitat. Identity checked to make sure not *P. superciliosus*, more commonly met in similar situation. W. end of Triple Swamp, Moorna Station, N.S.W. 29 Jan. 1968, 4 feeding on berries of *Nitraria*, site of former hotel, N. end of Lake Victoria, Nulla Station, N.S.W.

Family SYLVIIDAE

Acrocephalus stentoreus

BH: 18 Nov. 1968, continuous calling of several birds from river-edge reed beds at 2000 hr.; dark but calm night, Moorna Station woolshed, N.S.W.

Cincloramphus cruralis

M: 31 May 1969, 1 in oatfield near Fisherman's Cliff, Moorna Station, N.S.W. Extremely vocal, ? new arrival from elsewhere.

Family EPHTHIANURIDAE

Ephthianura albifrons

24 June 1968, 15 flew W. over red gum and black box forest, 1020 hr. Apparently

heading for open *Kochia* areas several km W. and SW., 8/8 cloud, thin rain commenced shortly. Berribee Island, Vict. 22 Oct. 1968, very many sightings made during next few days of mixed parties, numbering commonly to 300+ individuals, of all three chat species in varying proportions, throughout the *Kochia*, *Eragrostis australasica* and *Nitraria* area on the flats E. of Lake Victoria, on all three stations. Many birds in eclipse plumage; many juvenile plumage. Other parties were noted closer to Wentworth, in smaller numbers, and in a variety of Millewa and Ned's Corner Land System habitats. 30 Oct. 1968, flock of 200+, containing White-fronted and Crimson Chats, flying N.E. low over *Kochia* bushes, aeroplane landing strip, Nulla Station, N.S.W.

F: 5 Oct. 1967 (see *E. aurifrons* 5 Oct. 1967). 20 Nov. 1968, flock of 70 feeding amid new-sprouting *Brassica tournefortii*, sand hills, Talgarry Station, N.S.W. A few *E. aurifrons* also present.

E. tricolor

BH: 18 Mar. 1969, 60-80 plus about 12 Black-faced Wood Swallows flew up in a dense flock, then all plummeted earthward again as a Collared Sparrow-hawk flew direct and low over *Kochia* bushes through open dead *Casuarina* trees 1.5 km S. of Nulla Station homestead, N.S.W. 22 Mar. 1969, at 1045 and 1056 hr., prior to torrential rainstorm, 70+ and 22 flew N. low over crest of and along line of sand dunes calling very agitatedly. Lake Victoria, Nulla Station, N.S.W. (see *C. approximans*, *A. p. pacificus*, *C. leucosterna*, *H. nigricans*).

M: 22 Oct. 1968 (see *E. albifrons* 22 Oct. 1968). 27 Oct. 1968, 150+ in close group, feeding on ground but very steadily moving N. through *Kochia* and *Casuarina* areas. Birds continuously flying up, and dropping down again, to be immediately overtaken by others. Flock flew due N. when disturbed by observer. Nulla Station woolshed, N.S.W. 30 Oct. 1968 (see *E. albifrons* 30 Oct. 1968).

E. aurifrons

BH: 29 May 1969, female performing broken-wing trick as observer moved through

Nitraria and *Kochia* bushes, NW. Lake Victoria, Noola Station, N.S.W.

M: 22 Oct. 1968 (see *E. albifrons* 22 Oct. 1968).

F: 5 Oct. 1967, 12 feeding on ground around bases of *Nitraria* bushes, together with 8 *E. albifrons*. Lybra Back Paddock, Keera Station, Vict. 20 Nov. 1968 (see *E. albifrons* 20 Nov. 1968). 22 Mar. 1969, 50+ feeding amid *Kochia* bushes at *Casuarina* scrub margin, Nulla Station woolshed, N.S.W.

Family ACANTHIZIDAE

Aphelocephala leucopsis

F: 10 June 1967 (see *A. chrysorrhoa* 10 June 1967). 24 June 1967 (see same species). 18 July 1969, 35-40 in close flock, feeding along margin of large rainwater pool on claypan, SE. area of Dunedin Park Station, N.S.W. 28 May 1969 (see *A. chrysorrhoa* 28 May 1969).

Acanthiza chrysorrhoa addenda

F: 10 June 1967, 14 plus 8 Eastern Whitefaces feeding together beneath black box trees. Both species hopping swiftly over ground, exploring for food and actively feeding. Continual calling. Keera Station homestead, Vict. 24 June 1967, 30 Yellow-tailed Thornbills plus 6 Eastern Whitefaces feeding in same locality. 28 May 1969, 12 plus 18 *A. leucopsis* and one immature *P. goodenovii* feeding in close group under *Casuarina* trees and beneath *Kochia* bushes, Noola Station homestead area, N.S.W.

Family MALURIDAE

Mahurus leucopterus

Br: 25 Nov. 1968, 2 males fighting, and alternately chasing a brown bird, and attempting copulation. A new fight each time chasing ceased. *Casuarina/Kochia* association area, 2 km E. of Nampoo Station homestead, N.S.W. 29 May 1969, 2 males, one in partial breeding plumage, fighting each other; 5 brown birds in attendance. *Kochia* area, NW. Lake Victoria, Noola Station, N.S.W.

Family RHIPIDURIDAE

Rhipidura leucophrys

Br: 21 Oct. 1967, newly completed nest,

situated on a 25 cm stump of branch, 1.7 m up on lee side of trunk of enormous, solitary peppercorn tree at water edge, Lake Victoria, Nulla Station, N.S.W. Nest composed of wool (dead sheep 1.8 m away under tree canopy), of emu feathers (dead emu 3.8 m ditto), of cobwebs (much of trunk deeply recessed and hung with spider web) and of rootlets (grass roots 4.2 m away by water edge). Adults in attendance. 30 Oct. 1968, nest with 4 eggs, 1.8 m up in *Casuarina*, Cass's Camp, Nulla Station, N.S.W. Nest composed of cobweb, grass fibres (mostly spear grass) and lined with wool. 23 Nov. 1968, nest 2 m over Murray R. on leaning branch of red gum, Yelta cliff, Vict. Adults making many trips with small insects for 3 new-hatched young. Nest interior shaded by dense clump of low-hanging leaves.

BH: 28 Sept. 1967, an adult attacked a small Gould's Goanna *Varanus gouldii*, disturbed by the observer. Near Fisherman's Cliff, Moorna Station, N.S.W. 26 Sept. 1968 (see *L. sueurii* 26 Sept. 1968).

M: 21 Mar. 1969, 5 flying low in tight flock, E. through open mallee gums, 0185 hr., Duncedin Park Station, N.S.W.

F: 25 June 1967, 1 out on floating *Azolla* in mid-river, feeding on insects on surface of the fern, Murray R., Nampoo Station, N.S.W. 1 Oct. 1967 (see *S. vulgaris* 1 Oct. 1967). 31 July 1968, 1720-1810 hr. Many wagtails noted in pairs feeding on small insects on road surface. Counting of birds commenced from near Karawinna, and 88 individuals, mostly in pairs but including seven groups of 4 were counted in c. 65 km. External air temperature cold, estimated 7.8° C., and the sun set during the period of the observation. A sample of insects was collected from the car's radiator and bonnet. All were fresh and were quite obviously the first insects encountered between Melbourne and Karawinna—about 688 km. One mosquito present, not identified. The remainder of the sample of c. 20 insects were *Chironomus tepperi* Skuse (Fam. Chironimidae). Apparently numerous chironomids were flying low over the highway surface because it was warmest there, the black bitumen having absorbed heat during the day, and were being killed or injured by

the fairly heavy road traffic. The birds were fairly evenly spaced over the entire distance of the observation. Sturt Highway, between Karawinna and about 4.5 km E. of the S.A. border, Vict. 28 Oct. 1968 (see *M. ornatus* 28 Oct. 1968).

Family MUSCICAPIDAE

Petroica goodenovii

Br: 27 Sept. 1968, adult female with 1 flying young, Walpolla Creek, Keera Station, Vict.

F: 28 May 1969 (see *A. chrysorrhoa* 28 May 1969).

P. culcullata

19 Nov. 1968, pair of adults with 2 flying young in heavily striated plumage. Young feeding themselves, but adults bringing food also. Adult male in partial moult. Murray R. at Bone Gulch, Moorna Station, N.S.W. 23 Nov. 1968, juveniles in same area still; adults not seen.

Family PACHYCEPHALIDAE

Pachycephala rufiventris

Br: 28 June 1967, male in full breeding plumage, Scadding's property, Frenchman Cr. levee bank, N.S.W.

Family NEOSITTIDAE

Neositta chrysoptera

28 Oct. 1968, pair adults feeding 1 flying young, which was begging food with much excited wing fluttering and soft calls. Clump of *Casuarina*, Cass's Camp, Nulla Station, N.S.W.

Family CLIMACTERIDAE

Climacteris picumnus

Br: 26 Sept. 1968, pair feeding 1 flying young, black box trees, Lake Walla Walla, Ned's Corner Station, Vict. 28 Oct. 1968, pair with nest in hollow *Casuarina* trunk, beside track to Nulla Station woolshed. Entrance from knot-hole. Nest of wool and plant fibres. 2 eggs (Pl. 35, fig. 4). Nulla Station, N.S.W. 20 Nov. 1968, 2 well-fledged young in nest (above). Adults not in immediate attendance.

BH: (see *H. sanctus* 20 Nov. 1967). 19 June 1968, group of 6 in fairly close as-

sociation feeding on black box trunks. Winter flock?, Berribee Station homestead, Vict. 21 June 1968, groups of 6 and 8 in widely separated areas of back box on Berribee Island, Vict. Winter flocks (?) or family groups (?). 29 June 1968, 2 groups of 4 and of 7-8 birds in similar situations, Berribee Island, Vict.

Family DICAEDIDAE

Dicaeum hirundiaceum

F: 29 Sept. 1967, pair in full plumage feeding actively over willow flowers. Not determined whether insects or botanical food being taken. Murray R. bank, Moorna Station woolshed, N.S.W.

Pardalotus substriatus

29 Sept. 1967, nest burrow with adults frequently entering Murray R. cliff at Sharp Point (Devil's Elbow), Nampoo Station, N.S.W.

Family MELIPHAGIDAE

Meliphaga virescens

BH: 25 July 1969, 1 attacked a Black-eared Cuckoo which had been perched on top of a large *Nitaraia* bush, calling softly, Lake Victoria frontage, Nulla Station, N.S.W.

F: 26 Apr. 1968, several feeding on mistletoe flowers on *Casuarina* trees; 1 pursued a Chestnut-tailed Thornbill attempting to land in the same mistletoe clump. Near Lake Merretti, S.A. 24 Oct. 1968, 1 feeding on small orange berries growing on low, multi-leafed succulent. Bird picked a berry, rapidly pressed it many times in beak, whilst holding head tilted up. The berry was held at the extreme tip of the beak. The tongue was occasionally protruded beyond the berry. Finally, the berry was swallowed whole. Several were picked and eaten, several others were picked, pressed, then discarded. Examination of these showed bruising, but presumably these were unripe, although not detectably so. I ate some and found them quite palatable, sweet, but with slight oxalic taste. Lake Victoria frontage, Talgarry Station, N.S.W. 18 Mar. 1969, 4 + 2 feeding on flowers of *Nicotiana* shrubs different areas of Lake Victoria sand hills, Talgarry Station, N.S.W.

M. penicillata

Br: 24 Oct. 1967, nest 20 m in leafy clump of red gum, 180 m E. of punt on bank of Lindsay R., 3 young close to fledging sitting alongside nest, adults bringing food. Nest appeared built of cobweb, fine grass, cocoons and spider egg-sacs. Berribee Station, Vict. 19 Nov. 1968 (see *L. sueurii* 19 Nov. 1968).

M: 22 Apr. 1968, 1 in *Casuarina* clump, road turnoff to Dunedin Park homestead, N.S.W. Nearest red gum forest 2.5 km to SE. approx.

F: 29 Jan. 1968, 5 foraging in almond tree, Kulcurna homestead garden, N.S.W.

Melithreptus brevirostris

F: 21 Sept. 1968, 5 feeding on flowers of black box, Berribee Island, Vict. 22 Sept. 1968, 8 birds feeding in same tree.

Myzantha melanocephala

BH: 5 Oct. 1967, 5 chasing 1 Little Friar Bird, black box trees, Keera homestead, Vict.

Entomyzon cyanotis

Br: 24 Oct. 1967. Bird entering broken-off spout of red gum, c. 10 m up. Same tree as a pair of *Corvus coronoides* (see 24 Oct. 1967), near punt, Lindsay R., Berribee Station Vict.

BH: 27 Sept. 1967, 10 birds in tight flock swept at high speed through and between tops of red gums along Murray R., calling loudly. In sight for 0.8 km plus as flew downstream, Fisherman's Cliff, Moorna Station, N.S.W.

Philemon citreogularis

BH: (see *M. melanocephala* 5 Oct. 1967).

M: 23 Apr. 1967, 2 in red gums, Mullaroo Ck. bridge, Berribee Station, Vict. 'Early arrival for this year', H. F. Thomas, pers. comm.

F: 26 Sept. 1967, 2 feeding on red gum blossom, Big Island, Keera Station, Vict.

Acanthagenys rufogularis

F: 26 June 1967, 4 feeding in orange trees, Moorna homestead, N.S.W. 20 Nov. 1967, 2 feeding on flowers of Silky Oak (*Grevillea*), Berribee homestead garden, Vict. 28 Apr. 1968, 4 feeding on foliage of *Nitraria* bushes, Moorna Station woolshed, N.S.W. 27 Oct. 1968, 1 appeared to be feeding on peppercorn berries. This is not a positive record, as it may have

been eating small spiders or insects from dense webs spun over some larger berry bunches, Nulla Station woolshed, N.S.W. 31 May 1969, 2 feeding on flowers of mistletoe on *Acacia* tree, Fisherman's Cliff, Moorna Station, N.S.W.

Family FRINGILLIDAE

Carduelis carduelis

F: 25 June 1967 (see *P. domesticus* 25 June 1967).

Family ESTRILDIDAE

Poephila guttata

BH: 22 Mar. 1969, 4 dust-bathing in vehicle wheel-ruts beside *Nitraria* bushes, near salt lake, on Talgarry Station, N.S.W.

F: 28 Oct. 1968, 9 feeding on open sandy beach, near large peppercorn tree, NE. Lake Victoria, N.S.W., possibly on windblown grass seed.

Family PLOCEIDAE

Passer domesticus

Br: 19 Oct. 1967, pair apparently breeding in broken red gum stump at water edge, Lake Victoria, Talgarry Station, N.S.W., 29 Jan. 1968, several pairs breeding in abandoned Fairy Martin nests, on Kulcurna Station cliffs, N.S.W. 20 Sept. 1968, nest with 1 egg, peppercorn tree, Kulcurna homestead, N.S.W. 18 Nov. 1968, 2 pairs with nests in old burrows of either White-backed Swallow or Rainbow-Bird, bringing food for young, Merbein cliff, Vict. 23 Nov. 1968, pair nesting in old, partly broken Fairy Martin nest, Yelta cliff, Vict.

F: 25 June 1967, many together with numerous Goldfinches, among living and dead stems of cumbungi *Typha augustifolia* or *T. muelleri*. Birds considered to be feeding but not confirmed. Levee bank, Frenchman's Creek, N.S.W.

Family STURNIDAE

Sturnus vulgaris

Br: 27 Sept., 1968, 2 nests with young in outhouse ceiling, Keera Station, Vict. 23 Oct. 1968, pair with nest in old Chestnut-crowned Babbler nest, *Casuarina* clump, Cass's Camp, Nulla Station, N.S.W.

BH: 10 June 1967, adult softly mimicking

the ascending call of a Whistling Kite, Keera homestead, Vict. 23 Oct. 1968, flock of 150 mobbed a low-flying Swamp Harrier, Lake Victoria sand hills, Talgarry Station, N.S.W. 5 Oct. 1969, 1 in red gums imitating ascending call of Pallid Cuckoo, Lake Victoria, Talgarry Station, N.S.W.

F: 1 Oct. 1967, 2 accompanying feeding sheep and catching insects from right beside their noses. A Willie Wagtail also in close attendance. Near Moorna E. oxbow, N.S.W. 20 June 1968, 350-400 in dense flock feeding on newly irrigated pasture, late evening. Berribee homestead, Vict. 21 Sept. 1968, 3 feeding closely around the feet of a slowly walking plover *V. m. novaehollandiae* in irrigated pasture, Berribee Station, Vict.

Family GRALLINIDAE

Grallina cyanoleuca

Br: 28 Oct. 1968, nest with eggs 4.6 m in *Casuarina* clump, 0.8 km N. from Talgarry dams, Cass's Camp, Nulla Station, N.S.W. Second nest with 2 young only 11 m away in adjacent *Casuarina* tree, same locality; other old nests were seen at times, but none recorded in detail. The birds breed particularly in the red gum forest.

F: 25 June 1968, 1 seen in middle of Lindsay R. walking on a dense mat of floating *Azolla* fern, catching insects c. 1 cm long. Berribee Station, Vict.

Struthidea cinerea

BH: (see *P. nigricans* 1 Oct. 1967).

F: 2 Oct. 1967, 12 feeding with 8 *C. melanoramphus* on chaff spilled in sheep yards, Dunedin Park Station, N.S.W. 29 Jan. 1968, 10 feeding on area where sheep recently hand-fed on oats and lucerne hay, Tareena homestead, N.S.W. 22 Apr. 1968, 30+ feeding on spilled fodder, sheepyards at Dunedin Park Station, N.S.W.

Corcorax melanoramphus

Br: Nests were seen on several occasions, all abandoned, and details were not recorded. Birds breed widely, particularly in red gum and black box forests.

BH: 27 Sept. 1967, 22 birds flew out some 180 m from black box and red gum forest at

W. end of Fisherman's Cliff, Moorna Station, N.S.W., to feed amid small *Kochia* bushes and *H. floribundum* in the open. Two groups of 3 Black-backed Magpies also present. All remained for more than an hour before returning to tree cover. This species (Chough) rarely seen to leave at least light overhead cover for long at a time; frequents scrub margins much of the time. 26 Sept. 1968 (see *L. sueurii* 26 Sept. 1968).

M: 22 Feb. 1967, 50+ flock 1.3 km N. of Sturt H'way, Karrawinna Rd., Vict. 27 June 1968, 2 groups, 15 and 32, moved rapidly through red gum/black box forest, 30 minutes apart, 1015 and 1045 hr., Berribee Is., Vict. Observer static. 27 Nov. 1968, 25 in flock rapidly moving NW. through marginal vegetation at Lake Coombool, S.A.

F: 21 Apr. 1967, 20+ feeding along partly dry bore drain from windmill, Keera Station, Vict. 2 Oct. 1967 (see *S. cinerea* 2 Oct. 1967).

Family ARTAMIDAE

Artamus leucorhynchus

F: 20 Nov. 1968, 40 in feeding flock along margin of extensive stand of *Casuarina* trees, Dunedin Park Station, N.S.W. Birds repeatedly flying up for insects, alighting between each flight.

A. personatus

M: 28 Oct. 1968 (see *A. superciliosis* 28 Oct. 1968). 19 Nov. 1968, mixed flock, mainly of Masked, some White-browed Wood Swallows, total 400+, travelling high, 600-900 m, trending SW., 1315 hr. Loose flock, strung out in long line, almost at limit of unaided vision, readily identifiable 16 x 50 binoculars, much calling. Birds constantly making minor directional changes. Most of flight gliding, but some birds appeared to be darting at insects, while a few appeared to be travelling in close pairs. Light SW. breeze, 32° C., 1600 hr. Another group of 40+ Masked Wood Swallows, plus a few Tree Martins, travelling high and to SW. as earlier group. Wind now f 2-4 from SW., Bone Gulch, Moorna Station, N.S.W. 25 Nov. 1968, 30-40 plus 1 identified as White-browed Wood Swallow, SW. at 150 m, 0700 hr., calm,

sunny, Nampoo Station, N.S.W. 5 Oct. 1969 (see *A. superciliosis* 5 Oct. 1969).

F: 27 Nov. 1968, 30+ feeding over *Casuarina* trees, Cass's Camp, Nulla Station, N.S.W.

A. superciliosis

Br: 23 Oct. 1968, pair with 2 flying young, *Casuarina* clump, Cass's Camp, Nulla Station, N.S.W.

M: 28 Oct. 1968, mixed flock of White-browed and Masked Wood Swallows 150+, 1115 hr., flying NE. over sand dunes, Lake Victoria, N.S.W. Birds high, much calling. Weather details similar to record *M. ornatus* 28 Oct. 1968. 17 Nov. 1968, 100+ in loose flock flying N., 1515 hr., 44.4° C., very dusty, dry. Karadoc, E. of Mildura, Vict. 19 Nov. 1968 (see *A. personatus* 19 Nov. 1968). 25 Nov. 1968 (see *A. personatus* 25 Nov. 1968). 25 Nov. 1968, 9 flying SW., 600 m, 1420 hr., calm, 21.2° C., Nampoo Station, N.S.W. 5 Oct. 1969, 500+ in mixed flock with some Masked Wood Swallows, estimated elevation 1500-2100 m, slowly flying N. against obvious strong wind (f 3-4 on ground). Birds clearly visible with 16 x 50 binoculars. Much calling. Fine, sunny, 1020 hr.; 1115 hr., second group, appeared to be only White-browed Wood Swallows, same direction, lower altitude; 1140 hr., third group, c. 70 birds, estimated 10% White-browed Wood Swallows, remainder Masked. These in much tighter flock, which was repeatedly dispersing, then bunching again as birds flew N.-NE., direction altering slightly as flew. Much excited calling. Several pairs left main group to pursue each other, then rejoin flock. Birds flying at estimated 1200 m and climbing. Moorna Station woolshed, N.S.W.

A. cinereus

Br: 21 Oct. 1967, nest under construction, 4 m up in fork of *Casuarina*. Thin sticks and *Casuarina* cladodes being brought continually by both birds. Just S. of Cass's Camp on Talgarry Station, N.S.W.

BH: 18 Mar. 1969 (see *E. tricolor* 18 Mar. 1969).

M: 25 Apr. 1968, 30-40 in small groups in *Casuarina* trees just S. of Cass's Camp on Talgarry Station, N.S.W.

A. minor

26 Sept. 1968, 90-120 passed over, estimated 300 m, trending W. and calling loudly. Flock loosely spread out in long line, in groups of 6-12. Birds chiefly gliding, occasional brief spells of flapping. Light W. wind, f. 2-3, sunny, 3/8 cumulus cloud, ceiling 2-3000 m, warm, humid after several rainy days. Keera Station, Vict.

Family CRACTICIDAE

Cracticus nigrogularis

F: 10 June 1967, immature birds feeding on worms and small insects, sheepyard, Keera Station, Vict. 14 June 1967, 1 adult bird calling, and repeatedly flying out of and landing back in the crown foliage of a black box tree. On each flight bird brushed foliage with wings, hawked insects flying out, then re-alihted. Lybra paddock, Keera Station, Vict.

C. torquatus

F: 20 June 1968, 1 bird caught lizard *Sphenomorphus q. quoyii*, in black box trees, Berribee Station, Vict.

Gymnorhina tibicen

Br: 20 Sept. 1968, adult on eggs, stick nest 8.5 m in *Casuarina*, 0.4 km NW. of Moorna E. oxbow, Moorna Station, N.S.W. 5 Oct. 1969, adult on eggs, stick nest in *Acacia*, 5 m up, woolshed, Nulla Station, N.S.W. 7 Oct. 1969, nest with 3 well fledged young, 6.5 m in red gum, nest of sticks, Wentworth Aerodrome, N.S.W. 7 Oct. 1969, adult on nest, 12 m in red gum, Lock 10, Wentworth, N.S.W.

BH: 23 Oct. 1968, male attacked a Kestrel. Birds locked claws momentarily, tumbled several metres through air before separating, Talgarry homestead, N.S.W. 20 Nov. 1968, 28 in flock in *Casuarina/Kochia* association area, Moorna homestead mailbox (Wentworth-Renmark road), N.S.W. Flock appears late for a winter flock, and may constitute an 'open group' (Carrick 1963) of non-territorial birds. 18 Mar. 1969, 18 in loose flock gathered about large rain puddle, near Talgarry Station second dam, N.S.W. Two drinking.

M: 24 June 1968, 15 in wintering flock flew E. over red gum/black box forest, to open

ground, Berribee Island, Vict., travelling in loose group at 30 m.

Family CORVIDAE

Corvus coronoides

Br: 22 Feb. 1967, pair at possible nest on top of old hawk's nest, *Callitris* tree, Lybra Back Paddock, Keera Station, Vict. 26 Sept. 1967, adult on nest, 4.8 km W. of woolshed, Moorna Station, N.S.W. 24 Oct. 1967, 2 fledged young, 36 m in red gum, begging food from adults. Same tree as Blue-faced Honeyeater nest (see 24 Oct. 1967), banks of Lindsay R. near punt, Berribee Station, Vict. 20 Sept. 1968, adult on eggs, stick nest 7.5 m in *Casuarina* tree, 0.8 km NW. of Moorna E. oxbow, Moorna Station, N.S.W.

BH: (see *H. leucogaster* 1 Oct. 1967).

F: 19 Oct. 1967 (see *A. audax* 19 Oct. 1967). 30 Apr. 1968, 1 feeding on road-killed Ringneck Parrot *B. barnardi*, Merbein-Renmark road, Berribee Station, Vict.

C. mellori (as in Rowley 1967)

Br: (see Hobbs 1969).

BH: 22 July 1969, flock area, c. 1 km E. of Six Mile Cr. (Wentworth-Renmark road), N.S.W., 60-80 present.

M: 19 May 1969, 17 in roadside flock 0.8 km E. Ana Branch River bridge, Neilpo Station, N.S.W. 23 May 1969, 39 in flock, same locality.

F: 29 Apr. 1968, 40-60 on and about a dead sheep, Sturt Highway near Morkalla turn-off, Vict. 15-20 on another dead sheep, Gray's property, Morkalla, Vict. One *A. audax* arrived to feed, scattering ravens. 26 May 1969, 14 at dead sheep, Noola Station, N.S.W.

Feeding Associations

This section records areas where a considerable number of species were feeding in close intraspecific association. They are described in chronological order of observation:

25 Oct. 1967, on freshly irrigated pasture, Berribee Station, Vict., 9 Glossy Ibis, 84 Straw-necked Ibis, 4 White-faced Herons, 6 Spur-winged Plover, Starlings, Magpie Larks, Black-backed Magpies and Red-backed Parrots were all feeding in close company.

27 Apr. 1968, late afternoon and early evening, very humid, warm, 8/8 stratus cloud; torrential rain later at night. Chowilla Dam site to Renmark and on via Paringa to Berribee Station, Vict., by car. Enormous numbers of flying ants and termites observed throughout journey, and these were being actively hawked and eaten by the following species: Australian Raven, Little Raven, Black-backed Magpie, Starling, Silver Gull, Magpie Lark, Silvereve, Yellow-throated Miner, Apostle Bird, White-plumed Honeyeater, Black-faced Wood Swallow, White-breasted Wood Swallow.

24 Oct. 1968, Talgarry Station pump shed, Lake Victoria frontage, N.S.W., 60 Tree Martins, 10 Welcome Swallows, 8 Black-faced Wood Swallows and 8 White-breasted Swallows hawking insects immediately in lee of dense clump of red gums, during period of high winds. Only rarely did birds venture to windward, above tree top level, or beyond horizontal extension of trees. Any that did quickly returned to lee side.

20 Mar. 1969, at large rainwater puddle in sand dunes among *Nitraria* bushes, Lake Victoria, on Talgarry Station, N.S.W., 8 White-fronted Chats, 30-40 Orange Chats, 22 Crimson Chats, 3 Crested Pigeons and 25 Starlings were all drinking together in a large mixed flock. Chats of all three species were continuously arriving and departing. Starlings were split into four small flocks, which arrived separately over an 11 minute period from inland, but all left together and crossed sand dunes W. toward dead trees in the lake. Observation period 1620-1712 hr.

21 Mar. 1969, in flowering mistletoe growing on large *Acacia* close to Murray R. bank at Bone Gulch, Moorna Station, N.S.W., 3 White-plumed Honeyeaters, 1 Striped Honeyeater, 2 Little Friar Birds, 3 Yellow Rosellas, 1 Mallee Ringneck and 3 Chestnut-tailed Thornbills, were all feeding together in apparent harmony for a few minutes. Mistletoe clump had a circumference of no more than 1.2 m.

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Explanation of Plates

PLATE 34

- Fig. 1—View of Moorna Station, N.S.W. Road margined by Lignum *M. cunninghamii*, extensive shrub steppe with Bluebush *Kochia* spp. etc., and Black Box-River Red Gum in background.
Fig. 2—View south along lunette of Lake Victoria, Talgarry, N.S.W. Slopes with Poached Egg Daisy *Helichrysum floribundum*, scattered clumps of Dillon Bush *Nitraria schoberi* on hill, Native Tobacco *Nicotiana* sp. and River Red Gums along shore, at pump site (N.M.V. camp), and dead Red Gums along former lake shore.
Fig. 3—Lindsay R. and portion of small oxbow on Berribee Station, Victoria. Bluebush *Kochia* spp. in foreground, mature and sapling River Red Gums *Eucalyptus camaldulensis*, Black Box *E. largiflorens*, Lignum *Muehlenbeckia cunninghamii* and reeds *Juncus ingens* on far bank.

PLATE 35

- Fig. 1—Unusual site for an occupied nest of Whistling Kite *Haliastur sphenurus*, Lake Victoria, N.S.W., Photo Oct. 1967. Same nest occupied annually to 1972.
Fig. 2—Nests of *Pomatostomus ruficeps*. In centre occupied nest, with disused nests left and right, Nulla Station, N.S.W., May 1969.
Fig. 3—*Podargus strigoides* incubating. Nest in Black Box *Eucalyptus largiflorens*, small swamp SE. of Nulla homestead, N.S.W.
Fig. 4—Adult Brown Tree-creeper *Climacterus picumnus* emerging from nest hollow in dead *Casuarina* tree, Nulla Station, N.S.W., 28 Oct. 1968.
Fig. 5—Recently completed nests of Fairy Martins *Petrochelidon ariel*, on Murray R. cliffs at Kulcurna Station, N.S.W., Nov. 1968.
Fig. 6—Dead *Casuarina* trees with recent and old communal roosting and (?) breeding nests of Chestnut-crowned Babbler *Pomatostomus ruficeps*, Nulla Station, N.S.W., May 1969. Photos by K. N. G. Simpson

